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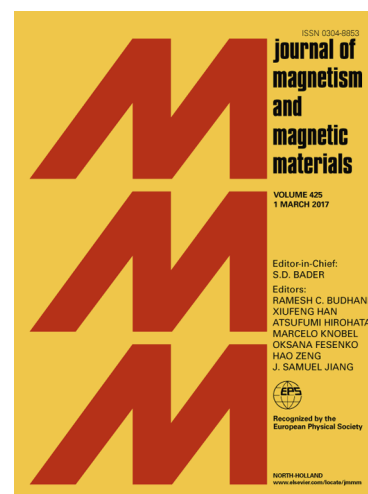
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# Soft magnetic property of $(\text{Fe}_{60}\text{Co}_{35}\text{Ni}_5)_{78}\text{Si}_6\text{B}_{12}\text{Cu}_1\text{Mo}_3$ alloys by laser additive manufacturing

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**Abstract:** Laser additive manufacturing (LAM) is a novel method for processing compositionally graded alloys and becomes increasingly important in the context of next-generation manufacturing technology. In this work,  $(\text{Fe}_{60}\text{Co}_{35}\text{Ni}_5)_{78}\text{Si}_6\text{B}_{12}\text{Cu}_1\text{Mo}_3$  soft magnetic alloys with different laser power were designed and processed by the LAM. The magnitudes of magnetic properties were analyzed, and the relationships among composition-microstructure-magnetic properties assessed. Results show that the  $(\text{Fe}_{60}\text{Co}_{35}\text{Ni}_5)_{78}\text{Si}_6\text{B}_{12}\text{Cu}_1\text{Mo}_3$  alloys by LAM exhibits relative uniform microstructure and comparable magnetic property compared with those conventional processed alloys. The bcc dominated microstructures exhibit a substantially higher saturation magnetization (Ms). With the increase in power, the average grain size of the alloy increased slightly and the increasing volume fraction of the Fe-Si phase

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